

**WIRELESS PERIPHERAL DEVICE  
FOR ALLOWING AN IP SOFTPHONE  
TO PLACE CALLS TO A PUBLIC  
SAFETY ANSWERING POINT**

5    **Technical Field**

          This invention relates to telephones in general, and in particular, to the capability of placing telephone calls to the correct public safety answering points for emergency needs.

**Background of the Invention**

10           In the office environment, IP softphones are interconnected via data connections to a customer communication switching system. A particular IP softphone may not be located in the same geographical area as the customer business communication switching system with which  
15   it is operating. Indeed, a particular IP softphone may not even be in the same state as the communication switching system. Even if the IP softphone is in the same building as the communication switching system, the communication switching system has no automatic means for determining the physical  
20   position of the IP softphone within the building. Such position information would have to be manually entered into the communication switching system. In addition, this manual information would have to be updated as the IP softphone moves throughout the building. For example, if a business  
25   traveler is in New Jersey but is utilizing a communication switching system in Colorado, upon placing a 911 emergency

call, this call will be routed to a public safety answering point (PSAP) in Colorado. Since the communication switching system has no capability to route the call to a PSAP in New Jersey or to determine the location of IP softphone, the  
5 business traveler can only hang up their IP softphone and find a traditional telephone to place the 911 emergency call. Even if the business traveler is physically located in the same building as the communication switching system in Colorado, the dispatcher at the PSAP may not be able to assist the business  
10 traveler in response to a 911 emergency call since the dispatcher has no idea where in the office building the business traveler is.

### **Summary of the Invention**

This invention is directed to solving these and other  
15 problems and disadvantages of the prior art. According to an embodiment of the invention, upon detecting the origination of an emergency call to a public safety answering point (PSAP), the IP softphone will place this call over the cellular network rather than utilizing data communication. By placing the  
20 emergency call over the cellular system, the call is automatically routed by the cellular system to the appropriate PSAP, and the cellular system also provides to the PSAP the location of the IP softphone. Advantageously, the IP softphone utilizes a peripheral that provides the radio frequency circuitry  
25 necessary to place the emergency call to the PSAP.

These and other advantages and features of the present invention will become apparent from the following description of an illustrative embodiment of the invention taken together with the drawing.

5     **Brief Description of the Drawing**

FIG. 1 illustrates, in block diagram form, an embodiment of an IP softphone utilizing the present invention;

FIG. 2 illustrates, in flow chart form, the steps performed by the IP softphone in implementing an embodiment  
10     of the invention; and

FIG. 3 illustrates, in block diagram form, another embodiment of an IP softphone utilizing the present invention.

**Detailed Description**

FIG. 1 illustrates an embodiment of a system for  
15     implementing the invention. IP softphone 100 is registered as a telephone with enterprise communication switching system 116 via wide area network (WAN) 112. WAN 112 may advantageously be a local area network (LAN) or, as is well known in the art, the Internet, ATM network, etc. One skilled in  
20     the art could readily envision that IP softphone 100 was not registered with enterprise communication switching system 116 but rather is simply a telephone device utilizing WAN 112 for communication with other softphones such as softphone 111. Enterprise communication switching system 116 may  
25     advantageously be an Avaya Definity® business

communication switching system (commonly referred as PBX). Advantageously, as is well known in the art, enterprise communication switching system 116 can be any other type of system such as an H.323 calling system. Cellular network 108  
5 is a well-known commercially available cellular switching system. PSAP 113 is a well-known public safety answering point. Public telephone network 109 is a switching public telephone network.

IP softphone 100 comprises personal computer  
10 (PC) 104 that provides overall control for the softphone. The audio interface is provided by elements 101-103. IP interface 106 provides interconnection to WAN 112. Radio interface 107 is intragral part of PC 104 and provides the cellular radio interface for placing telephone calls via cellular  
15 network 108. Radio interface 107 is the radio circuitry found in any commercial cellular telephone and is well known by those skilled in the art.

For normal telephone calls, IP softphone 100 communicates via WAN 112 with enterprise communication  
20 switching system 116. IP softphone 100 appears to be another telephone set to enterprise communication switching system 116 from the point of view of call processing. If the user of IP softphone 100 originates a normal call, this telephone call is placed via WAN 112 to enterprise communication switching  
25 system 116. However, if the user of IP softphone 100 places an emergency call by dialing advantageously "911", PC 104 originates this call via radio interface 107 through cellular

network 108. Cellular network 108 in combination with public telephone network 109 sets up the emergency call to PSAP 113. In addition, cellular network 108 provides the physical location of IP softphone 100 to PSAP 113.

5           FIG. 2 illustrates, in flow chart form, the steps performed by PC 104 in implementing the invention. After being started, decision block 201 determines if the operation being performed in call processing is a call origination. If the answer is no, the call processing operation is processed in a  
10   normal manner by block 203 before transferring control back to decision block 201. If the answer in decision block 201 is that the call processing operation is a call origination, decision block 202 determines if it is an emergency call to a PSAP. If the answer is no, block 207 performs normal processing before  
15   transferring control back to decision block 201. If the answer in decision block 202 is yes, block 204 activates radio interface 107, and block 206 places a call to the PSAP via cellular network 108 and public telephone network 109 before returning control back to decision block 201.

20           FIG. 3 illustrates another embodiment of a system for implementing the invention. IP softphone 300 is registered as a telephone with enterprise communication switching system 316 via wide area network (WAN) 312. WAN 312 may  
advantageously be a local area network (LAN) or, as is well  
25   known in the art, the Internet, ATM network, etc. One skilled in the art could readily envision that IP softphone 300 was not registered with enterprise communication switching system 316

but rather is simply a telephone device utilizing WAN 312 for communication with other softphones such as softphone 311.

Enterprise communication switching system 316 may advantageously be an Avaya Definity® business

5 communication switching system (commonly referred as PBX).

Advantageously, as is well known in the art, enterprise communication switching system 316 can be any other type of system such as an H.323 calling system. Cellular network 308 is a well-known commercially available cellular switching

10 system. PSAP 313 is a well-known public safety answering point. Public telephone network 309 is a switching public telephone network.

IP softphone 300 comprises personal computer (PC) 304 that provides overall control for the softphone. The  
15 audio interface is provided by elements 301-303. IP interface 306 provides interconnection to WAN 312. Universal Serial Bus interface (USB) 307 connects cellular radio circuit 318 to PC 304. USB 307 is well known by those skilled in the art. Cellular radio circuit 318 is external to PC 304 and is  
20 used by PC 304 for placing telephone calls via cellular network 308. Cellular radio circuit 318 is the radio circuitry found in any commercial cellular telephone and is well known by those skilled in the art.

For normal telephone calls, IP softphone 300  
25 communicates via WAN 312 with enterprise communication switching system 316. IP softphone 300 appears to be another telephone set to enterprise communication switching

system 316 from the point of view of call processing. If the user of IP softphone 300 originates a normal call, this telephone call is placed via WAN 312 to enterprise communication switching system 316. However, if the user of IP softphone 300 places an emergency call by dialing advantageously "911", PC 304 originates this call via USB 307 and cellular radio circuit 318 through cellular network 308. Cellular network 308 in combination with public telephone network 309 sets up the emergency call to PSAP 313. In addition, cellular network 308 provides the physical location of IP softphone 300 to PSAP 313. PC 304 performs similar steps to those illustrated in FIG. 2.

Of course, various changes and modifications to the illustrated embodiment described above will be apparent to those skilled in the art. Such changes and modifications can be made without departing from the spirit and scope of the invention and without diminishing its intended advantages. It is therefore intended that such changes and modifications be covered by the following claims except insofar as limited by the prior art.